Appl. No. 10/616,042
Amdt. dated November 16, 2005
Reply to Office action of October 4, 2005

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. – 5. (Cancelled)

6. (Currently Amended) A method comprising:

measuring at least a portion of an airflow ~~through~~ of a first naris through a first sensing tube, the measuring creates ~~to create~~ a first measured airflow ; and

measuring at least a portion of an airflow ~~through~~ of a second naris through a second sensing tube fluidly independent of the first sensing tube, the measuring creates ~~to create~~ a second measured airflow;

wherein measuring at least a portion of the airflow ~~through~~ of the first naris is accomplished without blocking the second naris; and

wherein measuring at least a portion of the airflow ~~through~~ of the second naris is accomplished without blocking the first naris.

7. (Currently Amended) The method as defined in claim 6 wherein the measuring ~~steps~~ take place during inhalation.

8. (Currently Amended) The method as defined in claim 6 wherein the measuring ~~step~~ takes place during exhalation.

9. (Currently Amended) The method as defined in claim 6 wherein measuring at least a portion of the airflow ~~through~~ of the first naris further comprises measuring at a known distance within the first naris.

10. (Currently Amended) The method as defined in claim 6 wherein measuring at least a portion of the airflow ~~through~~ of the first naris further comprises measuring the airflow through ~~a sensing~~ the first sensing being part of tube of a bifurcated nasal cannula worn by a patient.

11. (Original) The method as defined in claim 6 further comprising determining a difference in the first and second measured airflows.

12. (Currently Amended) A method comprising:

measuring a pressure associated with an airflow through a first naris, the measuring by way of a first sensing tube; and

measuring a pressure associated with an airflow through a second naris, the measuring the pressure associated with airflow through the second naris by way of a second sensing tube, the first and second sensing tubes fluidly independent;

wherein measuring the ~~attribute of~~ pressure associated with the airflow through the first naris is accomplished without blocking the second naris; and

wherein measuring the ~~attribute of~~ pressure associated with the airflow through the second naris is accomplished without blocking the first naris.

13. (Currently Amended) The method as defined in claim 12 wherein the measuring ~~steps further comprise~~ comprises measuring a pressure proximate to an opening of each of the first and second naris.

14. (Original) The method as defined in claim 12 further comprising determining a difference in the pressure measured between the first and second naris.

15. (Currently Amended) The method as defined in claim 12 wherein the measuring ~~steps take~~ takes place during inhalation.

16. (Currently Amended) The method as defined in claim 12 wherein measuring the pressure associated with the airflow through the first naris further comprises measuring a pressure in the first ~~a~~ sensing tube being part of a bifurcated nasal cannula ~~worn by a patient~~.

17.-18. (Cancelled)

19. (Currently Amended) A nasal function test device comprising:

a first ~~airflow~~ air mass flow sensor configured to fluidly couple to a first naris by way of a first sensing tube, the first air mass flow sensor ~~that~~ detects ~~at least a portion of an~~ airflow ~~through a~~ of the first naris that flows through the first sensing tube to create a first measured flow signal;

a second ~~airflow~~ air mass flow sensor configured to fluidly couple to a second naris by way of a second, fluidly indpendent sensing tube, the second air mass flow sensor ~~that~~ detects ~~at least a portion of an~~ airflow ~~through a~~ of the second naris that flows through the second sensing tube to create a second measured flow signal; and

a processor electrically coupled to the first and second airflow sensors, and wherein the processor is programmed to substantially simultaneously read the first and second measured flow signals.

20. (Currently Amended) The nasal function test device as defined in claim 19 further comprising:

a third ~~airflow~~ air mass flow sensor coupled to the processor, the third ~~airflow~~ air mass flow sensor detects at least a portion an oral airflow to create a measured oral flow signal; and

wherein the processor is programmed to substantially simultaneously read the first measured flow signal, the second measured flow signal, and the measured oral flow signal.

21. (Previously Presented) The nasal function test device as defined in claim 19 wherein the processor is further programmed to determine a difference between the first and second measured flow signals.

22. (Original) The nasal function test device as defined in claim 19 further comprising a display device coupled to the processor, and wherein the processor displays an indication of the first and second measured flow signals on the display device.

23. (Original) The nasal function test device as defined in claim 22 wherein the display device displays a graph of the first and second measured flow signals as a function of time.

24. (Original) The nasal function test device as defined in claim 22 wherein the display device displays a difference between the first and second measured flow signals.

25. (Original) The nasal function test device as defined in claim 19 further comprising:
a non-volatile memory coupled to the processor; and
wherein the processor is programmed to store the first and second measured flow signals as a first set of data in the non-volatile memory, and wherein the processor is further programmed to analyze differences between the first set of data in the non-volatile memory and a second set of data taken at a different time.

26. (Currently Amended) The nasal function test device as defined in claim 19 further comprising:

a bifurcated nasal cannula ~~having~~ a comprising the first sensing tube and a the second sensing tube~~; and~~

~~wherein the first sensing tube fluidly couples to the first airflow sensor, and wherein the second sensing tube fluidly couples to the second airflow sensor~~.

27. (Original) The nasal function test device as defined in claim 26 wherein the first sensing tube has an opening positioned within the airflow of the first naris.

28. (Currently Amended) The nasal function test device as defined in claim 27 wherein the opening of the first sensing tube is proximate to an entrance to the first naris.

29. (Currently Amended) The nasal function test device as defined in claim 27 wherein the opening of the first sensing tube is a measurable distance within the first naris.

30. (Currently Amended) The nasal function test device as defined in claim 19 further comprising third ~~airflow~~ air mass flow sensor fluidly coupled to the first ~~airflow~~ air mass flow sensor, and wherein the first ~~airflow~~ air mass flow sensor produces the measured flow signal during inhalation, and wherein the third ~~airflow~~ air mass flow sensor produces a measured flow signal during exhalation.

31. (Original) A nasal function test device comprising:

a first airflow sensor that detects at least a portion of an airflow through a first naris to create a first measured flow signal;

a second airflow sensor that detects at least a portion of an airflow through a second naris to create a second measured flow signal; and

a processor electrically coupled to the first and second airflow sensors, and wherein the processor is programmed to substantially simultaneously read the first and second measured flow signals;

~~The nasal function test device as defined in claim 19 further comprising:~~

wherein the processor is further programmed to determine an area under a curve produced by changes in the first measured flow signal during at least one of inhalation ~~and~~ or exhalation, the area being a first breathing score;

wherein the processor is further programmed to determine an area under a curve produced by changes in the second measured flow signal during at least one of inhalation ~~and~~ or exhalation, the area being a second breathing score; and

wherein the processor determines a difference between the first and second breathing score.

32. (Previously Presented) A system comprising:

a differential pressure measurement device having first and second ports, wherein the first port is configured to be fluidly coupled to a first nostril of a patient, and wherein the second port is configured to be fluidly coupled to a second nostril of a patient;

an indicator coupled to the differential pressure measurement device, and wherein the indicator displays an indication of a difference in air pressure associated with airflow in each of the first and second nostrils.

33. (Original) The system as defined in claim 32 wherein the indicator further comprises a display device that provides a plot of the pressure reading taken by the differential pressure device as a function of time.

34. (Currently Amended) The system as defined in claim 32 further comprising:

a nasal cannula having a first and second sensing lines, the first and second sensing lines not in fluid communication; and

wherein the first sensing line ~~couples~~ couples to the first port, and wherein the second sensing line couples to the second port.

35. (Previously Presented) A method comprising:

measuring a relative airflow as between the nostrils of a patient with the patient's head held in a first position and at a first respiratory rate;

measuring a relative airflow as between the nostrils of the patient with the patient's head held in a second position and at a second respiratory rate;

wherein the first and second position are one each selected from the group of: head upright, head tilted left, head tilted left, head facing down or head facing up; and

wherein the first and second respiratory rate are one each selected from the group of: tidal breathing or maximum inspiration.

36. (Original) The method as defined in claim 35 further comprising determining whether there are differences in measured relative airflow between the first position and the second position.

37. (Original) The method as defined in claim 35 wherein measuring the relative airflow as between the nostrils of a patient with the patient's head held in a first position further comprises measuring without blocking either nostril.

38. (Original) The method as defined in claim 37 wherein measuring the relative airflow as between the nostrils of the patient with the patient's head held in a second position further comprises measuring without blocking either nostril.

39. (Original) The method as defined in claim 35 further comprising:

measuring oral airflow with the patient's head in the first position; and

measuring oral airflow with the patient's head in the second position.

40. (Currently Amended) A nasal function test device comprising:
a first pressure sensor configured to fluidly couple to a first naris by way of a first sensing tube, the first pressure sensor ~~that~~ detects a pressure associated with an airflow through ~~a~~ the first naris to create a first measured signal;
a second pressure sensor configured to fluidly couple to a second naris by way of a second sensing tube, the second sensing tube fluidly independent of the first sensing tube, and the second pressure sensor ~~that~~ detects a pressure associated with an airflow through ~~a~~ the second naris to create a second measured signal; and
a processor electrically coupled to the first and second pressure sensors, and wherein the processor is programmed to substantially simultaneously read the first and second measured signals.

41. (Previously Presented) The nasal function test device as defined in claim 40 wherein the processor is further programmed to determine a difference between the first and second measured signals.

42. (Previously Presented) The nasal function test device as defined in claim 40 further comprising a display device coupled to the processor, and wherein the processor displays an indication of the first and second measured signals on the display device.

43. (Original) The nasal function test device as defined in claim 42 wherein the display device displays a graph of the first and second measured signals as a function of time.

44. (Original) The nasal function test device as defined in claim 42 wherein the display device displays a difference between the first and second measured signals.

45. (Original) The nasal function test device as defined in claim 40 further comprising:

a non-volatile memory coupled to the processor; and

wherein the processor is programmed to store the first and second measured signals as a first set of data in the non-volatile memory, and wherein the processor is further programmed to analyze differences between the first set of data in the non-volatile memory and a second set of data taken at a different time.

46. (Currently Amended) The nasal function test device as defined in claim 40 further comprising:

a bifurcated nasal cannula ~~having~~ ~~a~~ comprising the first sensing tube and ~~a~~ the second sensing tube~~; and~~

~~wherein the first sensing tube fluidly couples to the first pressure sensor, and wherein the second sensing tube fluidly couples to the second pressure sensor~~.

47. (Currently Amended) The method as defined in claim 6 wherein the measuring ~~steps take~~ takes place substantially simultaneously.

48. (Previously Presented) The method as defined in claim 6 further comprising measuring at least a portion of an oral airflow.

49. (Currently Amended) The method as defined in claim 48 wherein the measuring ~~steps~~ further ~~comprise~~ comprises measuring substantially simultaneously.

50. (Currently Amended) A method comprising:

measuring at least a portion of an airflow ~~through~~ of a first naris through a first sensing tube, the measuring creates ~~to create~~ a first measured airflow; and

substantially simultaneously

measuring at least a portion of an airflow ~~through~~ of a second naris through a second, fluidly independent sensing tube, the measuring creates ~~to create~~ a second measured airflow.

51. (Currently Amended) The method as defined in claim 50 where ~~each~~ measuring ~~step~~ further comprises measuring at least a portion of the airflow with a respective mass flow sensor.

52. (Currently Amended) The method as defined in claim 50 wherein the measuring ~~steps take~~ takes place during inhalation.

53. (Currently Amended) The method as defined in 51 wherein ~~each~~ measuring ~~step~~ further comprises measuring at least a portion of the airflow with the respective mass flow sensor fluidly coupled to the respective naris by a sensing tube of a bifurcated nasal cannula.

54. (Cancelled)

55. (Currently Amended) A method comprising:

measuring a pressure associated with an airflow through a first naris by ~~The method as defined in claim 54 further comprising wherein measuring a pressure associated with an airflow through the first naris wherein further comprises~~ measuring a pressure in a first sensing tube of a bifurcated nasal cannula worn by a patient; and substantially simultaneously

measuring a pressure associated with an airflow through a second naris by ~~wherein measuring a pressure associated with an airflow through the second naris further comprises~~ measuring a pressure in a second sensing tube of the bifurcated nasal cannula worn by the patient.